

REPAIR OF LOCALIZED DEFECTS IN MULTILAYER-COATED RETICLE

BLANKS FOR EXTREME ULTRAVIOLET LITHOGRAPHY

ABSTRACT OF THE DISCLOSURE

A method is provided for repairing defects in a multilayer coating layered onto a reticle blank used in an extreme ultraviolet lithography (EUVL) system. Using high lateral spatial resolution, energy is deposited in the multilayer coating in the vicinity of the defect. This can be accomplished using a focused electron beam, focused ion beam or a focused electromagnetic radiation. The absorbed energy will cause a structural modification of the film, producing a localized change in the film thickness. The change in film thickness can be controlled with sub-nanometer accuracy by adjusting the energy dose. The lateral spatial resolution of the thickness modification is controlled by the localization of the energy deposition. The film thickness is adjusted locally to correct the perturbation of the reflected field. For example, when the structural modification is a localized film contraction, the repair of a defect consists of flattening a mound or spreading out the sides of a depression.

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